

1974

Florida Technological University College of Natural Sciences research activities, July 1, 1973-June 30, 1974

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**Florida
Technological
University**



COLLEGE OF NATURAL SCIENCES

RESUME OF RESEARCH ACTIVITIES

JULY 1, 1973 - JUNE 30, 1974

FLORIDA TECHNOLOGICAL UNIVERSITY

COLLEGE OF NATURAL SCIENCES

RESEARCH ACTIVITIES

July 1, 1973
through
June 30, 1974

Florida Technological University
College of Natural Sciences
P. O. Box 25000
Orlando, Florida 32816

DM1 7. 3449

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* Inasmuch as the 1973-74 report of research activities is the first report of this nature issued by the College of Natural Sciences, we have also included a list of publications for the years 1968-73. In subsequent years, only current accomplishments will be reported.

INTRODUCTION

We are pleased to present this summary of the research activities of the faculty of the College of Natural Sciences during the 1973-74 fiscal year. New research funded during this period totaled \$344,078, which is a significant increase over the preceding year. This increased activity is also evident in the number of sponsored and unsponsored projects, faculty involved, presentations and publications.

Faculty involvement in community affairs and public service ventures also continued at a high rate, and the faculty are to be commended for this effort from which everyone benefits.

Of special significance during 1973-74 was the establishment of the Gordon J. Barnett Professorship in Environmental Sciences, with Dr. Rudy J. Wodzinski being the first recipient of this prestigious award. Both Dr. Wodzinski and the University are indebted to Mr. Barnett for this support which will, in time, benefit not only the Greater Orlando community but also the entire nation.

Bernard Ostle
Dean

FUNDED RESEARCH 1973-74

ALLIED HEALTH SCIENCES

TITLE: Office of Education, Title VI

PRINCIPAL INVESTIGATOR: Vlado A. Getting

SPONSORING AGENCY: HEW

* * * * *

TITLE: Allied Health Special Improvement -
Medical Records Administration

PRINCIPAL INVESTIGATOR: Vlado A. Getting

SPONSORING AGENCY: HEW-PUS Health Resources Administration

GRANT NO.: 5 D01 AH50560-03 SRC

* * * * *

TITLE: Allied Health Special Improvement -
Medical Technology

PRINCIPAL INVESTIGATOR: Vlado A. Getting

SPONSORING AGENCY: HEW-PUS Health Resources Administration

GRANT NO.: 1 D01 AH50745-01-Med.Tech.

FUNDED RESEARCH 1973-74

BIOLOGICAL SCIENCES

TITLE: Ecological, Biological and Taxonomic Studies
of Insect Enemies of Aquatic Weeds in Florida

PRINCIPAL INVESTIGATOR: David H. Vickers

SPONSORING AGENCY: Florida Department of Natural Resources

GRANT NO.: 111220001 (acct. no.)

A B S T R A C T

Grant for three-year research (terminating 8/30/74) on ecological, biological and taxonomic studies of insect enemies of aquatic weeds in Florida. The original objectives of this grant were met during the first two years. So a shift in emphasis occurred during the third year's effort. Dr. John Osborne undertook a study on the use of colored dyes as a means of controlling submergent aquatic plants while Drs. David Vickers and J. F. Charba studied the energy requirements of Eochetina eichhorniae, the hyacinth water weevil, an imported pest of water hyacinth.

* * * * *

TITLE: Solid Waste Demonstration Grant

PRINCIPAL INVESTIGATOR: David H. Vickers

SPONSORING AGENCY: Orange County, Florida

GRANT NO.: 181220003 (acct. no.)

A B S T R A C T

Chemical and microbiological analyses of ground waters from the Orange County Landfill Site were continued for a third year after initial operation of the site in an attempt to measure the extent and direction of movement of chemical-biological leachate from the waste matter through the ground water of the surrounding area. Results showed that very little movement had occurred and that the anaerobic conditions developed in the leachate prevented development and spread of pathogens.

FUNDED RESEARCH 1973-74

BIOLOGICAL SCIENCES (continued)

TITLE: Survey of Oxidation Ponds for Enteroviruses
PRINCIPAL INVESTIGATOR: Robert N. Gennaro
SPONSORING AGENCY: Florida Department of Pollution Control

A B S T R A C T

This research is sponsored by the Florida Department of Pollution Control for the purpose of detecting enteroviruses in the oxidation ponds. The results will be incorporated into statewide standards which are necessary in order to control and monitor land spreading of secondary sewage effluent.

* * * * *

TITLE: Harrison/Sigma Xi
PRINCIPAL INVESTIGATOR: Margaret H. Harrison
SPONSORING AGENCY: Sigma Xi

* * * * *

TITLE: The Study of Ecological Effects and
Environmental Fate of Solid Rocket Exhaust
PRINCIPAL INVESTIGATOR: John C. Mickus
SPONSORING AGENCY: NASA/KSC
GRANT NO.: NGR 10-019-004 (part)

* * * * *

TITLE: Office of Education, Title VI
PRINCIPAL INVESTIGATOR: Harvey A. Miller
SPONSORING AGENCY: HEW

* * * * *

FUNDED RESEARCH 1973-74

BIOLOGICAL SCIENCES (continued)

TITLE: Florida Academy of Science Editor

PRINCIPAL: Harvey A. Miller

SPONSORING AGENCY: Florida Academy of Science

* * * * *

TITLE: Limnological monitoring of Spring Lake

PRINCIPAL INVESTIGATOR: John Osborne

SPONSORING AGENCY: Dr. P. Phillips Foundation

GRANT NO.: 181220008 (acct. no.)

A B S T R A C T

The effect of stormwater and spring water runoff on the limnology of Spring Lake was studied. Monitoring of physical, chemical and limnological parameters will continue for two more years. Management of runoff by retention ponds was evaluated during the first year. Seasonal changes in zooplankton, benthic invertebrates and algae were noted.

* * * * *

TITLE: Systematic Studies in the Neotropical Capnodiaceae

PRINCIPAL INVESTIGATOR: Don R. Reynolds

SPONSORING AGENCY: National Science Foundation

GRANT NO.: NSF Grant GB-35487 (9/1/72-2/28/75)

A B S T R A C T

Field studies on sooty mold ascomycetes are being conducted in the Neotropics. Laboratory work involves pure culture isolate observations, ascocarp development and experimental observations on pleomorphic relationships.

* * * * *

FUNDED RESEARCH 1973-74

BIOLOGICAL SCIENCES (continued)

TITLE: Studies of bitunicate ascus structure.

PRINCIPAL INVESTIGATOR: Don R. Reynolds

SPONSORING AGENCY: Research Corporation

GRANT NO.: 181220006 (acct. no.)

A B S T R A C T

Support of research on bitunicate ascus structure. Ascus structure of the bitunicate and unitunicate peponomycetes were studied with light and electron microscopy. Emphasis was on wall structure and developmental sequence of the ascus.

* * * * *

TITLE: Research projects to be undertaken by FTU on behalf of the USDA by specific request.

PRINCIPAL INVESTIGATOR: Don R. Reynolds

SPONSORING AGENCY: USDA, Plant Science Research Division,
Agricultural Research Division, Orlando, Florida

GRANT NO.: Agreement #12-14-100-34 (6-8-72-6/30/74)

A B S T R A C T

Research was undertaken on the cause of the citrus decline disease at an ultrastructural level.

* * * * *

TITLE: A Study of a Diverse Coastal Ecosystem on the Atlantic Coast of Florida

PRINCIPAL INVESTIGATOR: Haven C. Sweet

SPONSORING AGENCY: NASA/KSC

GRANT NO.: NGR 10-019-004

FUNDED RESEARCH 1973-74

BIOLOGICAL SCIENCES (continued)

A B S T R A C T

Determination of base line ecological information on the Merritt Island Wildlife Refuge.

* * * * *

TITLE: Electron Microscopy of Vascular Obstructions in the Roots of Blight-affected Citrus Trees.

PRINCIPAL INVESTIGATOR: Gail VanderMolen

SPONSORING AGENCY: USDA

GRANT NO.: (under blanket purchase order No. S-290-ARS)

A B S T R A C T

Blight on Young Tree Decline is a citrus disease causing heavy economic losses in Florida. Little is known about the pathology of the disease. A causative agent has not been identified. These studies include mapping of obstructions and ultrastructural examination of their contents.

* * * * *

TITLE: Vitamin B₆ (Pyridoxine) Regulation of Apoenzyme Levels in Escherichia coli B.

PRINCIPAL INVESTIGATOR: Roseann S. White

SPONSORING AGENCY: Society of the Sigma Xi

A B S T R A C T

A study is being made to evaluate the extent to which the synthesis of the vitamin B₆ requiring apoenzymes may be regulated by the concentration of the coenzyme in the cell. Auxotrophic, i.e., vitamin B₆ requiring mutants of wild type E. coli B. will be used as the model system to obtain cells deficient in the coenzyme. Studies involve a comparison of the induction of apotryptophanase by the substrate Tryptophane in B₆ depleted mutants and mutants supplemented with varying concentrations of the vitamer.

* * * * *

FUNDED RESEARCH 1973-74

BIOLOGICAL SCIENCES (continued)

TITLE: The Gordon J. Barnett Professorship
in Environmental Sciences

PRINCIPAL: Rudy J. Wodzinski

SPONSORING AGENCY: The Gordon J. Barnett Foundation

A B S T R A C T

The Barnett Professorship has enabled the recipient to further his scientific development in the environmental sciences. Two manuscripts which were partially completed have been finished and submitted to journals for publication. One has been accepted and the other is being reviewed.

Research was conducted with one graduate on the Mapping of Activated Sludge Particles. Methods have been developed for enzymatic degradation of the particles and thus the major premise of the research has been established. Research was also conducted with one undergraduate student on The Lytic Activity of Serratia marcescens. Purification of the active component by membrane filtration was not successful.

A research proposal on enteroviruses in the environment has been submitted to the Department of Pollution Control and is pending.

Emphasis during the past nine months has centered on the preparation of a textbook on Water and Waste Microbiology. Approximately 200 original articles and 30 reference and text books pertaining to the subject were read and abstracted. It is estimated that 14,000 pages of material were evaluated. A rough draft of two chapters of the textbook -- Chapter 2 on Viruses, and Chapter 3 on Disinfection of Water and Waste Materials -- has been completed.

FUNDED RESEARCH 1973-74

CHEMISTRY

TITLE: Olin Summer Project Grant
PRINCIPAL INVESTIGATOR: Graeme L. Baker
SPONSORING AGENCY: Olin Corporation Charitable Trust
GRANT NO.: Acct. No. 5127

A B S T R A C T

Fellowship to assist exceptional science students while they work with an outstanding professor on a creative project for 10 weeks during the summer.

* * * * *

TITLE: A Project to Develop Instructional Materials for a Course in Industrial Chemistry.
PRINCIPAL INVESTIGATOR: Chris A. Clausen III
SPONSORING AGENCY: National Science Foundation
GRANT NO.: GZ-2634 (NSF)

A B S T R A C T

Advanced Science Education project as outlined in title.

* * * * *

TITLE: Fundamental Biochemical Approach to the Improvement of Citrus Quality.
PRINCIPAL INVESTIGATOR: John P. Idoux
SPONSORING AGENCY: National Science Foundation
GRANT NO.: GZ-2915 made to Coca-Cola Foods Division, Plymouth, Florida

A B S T R A C T

The project objective was to immobilize and study certain citrus enzymes involved in flavor quality. This project was completed during summer 1974.

* * * * *

FUNDED RESEARCH 1973-74

CHEMISTRY (continued)

TITLE: Variation-perturbation treatment of chemical scattering problems.

PRINCIPAL INVESTIGATOR: Steven K. Knudson

SPONSORING AGENCY: American Chemical Society

GRANT NO.: Petroleum Research Fund, Grant #2848-G2

* * * * *

TITLE: Interdisciplinary Educational Proj./Sci. of Criminalistics

PRINCIPAL INVESTIGATOR: W. W. McGee

SPONSORING AGENCY: Gov. Council on Criminal Justice

A B S T R A C T

The objective is to describe and develop facilities to support the implementation of the BS degree program in Forensic Science.

* * * * *

TITLE: Crime Lab. II
Crime Lab. III

PRINCIPAL INVESTIGATOR: W. W. McGee

SPONSORING AGENCY: Gov. Council on Criminal Justice

A B S T R A C T

The objective is to develop facilities to support the implementation of the BS degree program in Forensic Science.

* * * * *

TITLE: Synthesis of Spiro [4.4] nonatetraene and Spiro [6.6] tridecahexaene

PRINCIPAL INVESTIGATOR: Thomas N. Wheeler

SPONSORING AGENCY: Petroleum Research Fund of the American Chemical Society

GRANT NO.: PRF 6497-B1

FUNDED RESEARCH 1973-74

CHEMISTRY (continued)

A B S T R A C T

Steps in the synthesis of spiro [4.4] nonatetraene and spiro [6.6] tridecahexaene which have been completed are described. Remaining steps in the synthesis of these two compounds are discussed and outlined. Experiments designed to explore the chemical reactivity of these systems are outlined.

* * * * *

TITLE: The synthesis of Spiro [4.6] undecapentaene and Spiro [2.4] heptatriene

PRINCIPAL INVESTIGATOR: Thomas N. Wheeler

SPONSORING AGENCY: Research Corporation

GRANT NO.: University Acct. No. 181221006

A B S T R A C T

The primary purpose of the project is to develop new synthetic photochemical methods for the preparation of an interesting class of highly strained, small ring pseudoaromatic compounds known as spirarenes. The generation of triplet carbenes from diacyldiazoketones, and the chemical reactivity of such species is a broader aspect of the work.

* * * * *

TITLE: Synthesis of Spiro [4.6] undecapentaene and Spiro [2.4] heptatriene

PRINCIPAL INVESTIGATOR: Thomas N. Wheeler

SPONSORING AGENCY: Sigma Xi

A B S T R A C T

The development of photochemical routes to the synthesis of spirarenes is being explored. The chemistry of the carbenes generated in the triplet sensitized photolyses of diazoketones is a broader aspect of the work.

* * * * *

FUNDED RESEARCH 1973-74

PHYSICS

TITLE: Project Physics

PRINCIPAL INVESTIGATOR: John R. Bolte

SPONSORING AGENCY: National Science Foundation

GRANT NO.: NSF Grant No. GW 8539 (terminates 9/30/74)

A B S T R A C T

A six-week Project Physics Implementation Program sponsored by the National Science Foundation was held on campus during the 1974 summer session. Thirty (30) secondary teachers of physics and physical science from throughout the United States (and including one teacher from South America) participated in the program and plan to initiate Project Physics methods and materials in their schools during the 1974-75 academic year. The content, philosophy, methods, and materials of Project Physics, a program originally developed at Harvard University, were thoroughly reviewed during the program.

NON-SPONSORED RESEARCH PROJECTS: 1973-74

BIOLOGICAL SCIENCES

TITLE: Study of Chitons of Florida and Tropical America

PRINCIPAL

INVESTIGATOR: Robert C. Bullock

A B S T R A C T

The primary objective is to make a preliminary investigation on the Polyplacophora of the State of Florida and compare these species with closely related ones found in the tropical waters of the West Indies and the eastern Pacific. The project will emphasize the family Ischnochitonidae, particularly the Stenoplax group; other species will be studied as time and material become available.

* * * * *

TITLE: Study of Characteristics of Bacteria from Contaminated Ground Water

PRINCIPAL

INVESTIGATOR: Julius F. Charba

A B S T R A C T

The project objective is to determine identity of the dominant and/or facultative species of bacteria isolated from contaminated ground water and establish pH tolerance range for growth in a partly artificial medium during both aerobic and anaerobic growth.

* * * * *

TITLE: Isoenzymes and Tumor Production in the Tumorous-head Strain of Drosophila Melanogaster

PRINCIPAL

INVESTIGATOR: David T. Kuhn

A B S T R A C T

The project objective is to determine the biochemical basis of tumor development.

* * * * *

NON-SPONSORED RESEARCH PROJECTS: 1973-74

BIOLOGICAL SCIENCES (Continued)

TITLE: Drosophila Molecular Genetics

PRINCIPAL

INVESTIGATOR: David T. Kuhn

A B S T R A C T

Project objective is an understanding of the biochemistry of tumor development in the tumorous-head strain of Drosophila melanogaster and to obtain data to be used in grant proposals to NTH cancer research, NSF, etc.

* * * * *

TITLE: Immunochemistry of Diethylstilbestrol

PRINCIPAL

INVESTIGATOR: J. C. Mickus

A B S T R A C T

The project objective is to produce specific antibodies against diethylstilbestrol for the purpose of providing an assay for the measurement of DES in biological tissue as well as removal of the DES from such tissue.

* * * * *

TITLE: Diethylstilbestrol Immunology

PRINCIPAL

INVESTIGATOR: J. C. Mickus

A B S T R A C T

The project objective is the preparation of Des-Protein complex which will elicit antibody against des. This complex to be used to remove des from animal tissue before slaughter.

* * * * *

TITLE: Limnological Studies on Some Local Lakes

PRINCIPAL

INVESTIGATOR: John A. Osborne

NON-SPONSORED RESEARCH REPORTS: 1973-74

BIOLOGICAL SCIENCES (Continued)

A B S T R A C T

Study of (1) zooplankton species diversity of Lake Apopka, (2) monthly sampling of Spring Lake and runoff ponds, (3) Aquatic Weed Project, #5080, dye studies and survey of lakes in Seminole and Orange Counties, Florida.

* * * * *

TITLE: Limnology Research

PRINCIPAL

INVESTIGATOR: John A. Osborne

A B S T R A C T

Monthly sampling of Spring Lake, Florida, for various physical-chemical and biological parameters will be undertaken during the Spring Quarter, 1973 academic year.

* * * * *

TITLE: Isoenzyme Studies in Secale

PRINCIPAL

INVESTIGATOR: H. J. Price

A B S T R A C T

The project objectives are:

- (a) To detect enzyme variation within the genus Secale, utilizing starch-gel electrophoresis.
- (b) To use zymograms in analyzing evolutionary affinities among the species.
- (c) To obtain evidence pertaining to the genetic control of enzymes.

* * * * *

TITLE: DNA Content Evolution in Plants

NON-SPONSORED RESEARCH REPORTS: 1973-74

BIOLOGICAL SCIENCES (Continued)

PRINCIPAL

INVESTIGATOR: H. J. Price

A B S T R A C T

The project objective is to analyze variation in DNA content in higher plants in an evolutionary and developmental context.

* * * * *

TITLE: Studies of Florida Fishes: Evolution of Gut Coiling
Patterns in Minnows

PRINCIPAL

INVESTIGATOR: F. F. Snelson

A B S T R A C T

The project objective is to describe the phylogeny and ecological significance of gut structure in the minnows of North America.

* * * * *

TITLE: Ecology of Sandpine-Oak Communities in Florida

PRINCIPAL

INVESTIGATOR: I. Jack Stout

A B S T R A C T

The objective is to (1) document the demographic changes in the small mammal components of the sandpine-scrub oak community, and (2) determine the nature of the resource division among the coexisting small mammals found in the sandpine-scrub oak community.

* * * * *

TITLE: Antigenic Components of Hi capsulatum and Their
Characterization

PRINCIPAL

INVESTIGATOR: Michael J. Sweeney

NON-SPONSORED RESEARCH REPORTS: 1973-74

BIOLOGICAL SCIENCES (Continued)

A B S T R A C T

The project objective is the characterization of antigens chemically and immunologically with the goal of finding a specific skin test antigen for diagnosis of histoplasmosis.

* * * * *

TITLE: Reduce Merritt Island Botanical Data for Computer Processing

PRINCIPAL

INVESTIGATOR: Haven C. Sweet

A B S T R A C T

Project objective is a program for the storage, sorting, selection and correlation of data.

* * * * *

TITLE: Ornithological Investigations in Central Florida

PRINCIPAL

INVESTIGATOR: Walter K. Taylor

A B S T R A C T

The project objective is to obtain as much information as possible on various aspects of avian biology.

* * * * *

TITLE: Bird Migration in Central Florida

PRINCIPAL

INVESTIGATOR: Walter K. Taylor

A B S T R A C T

The project objective is to obtain as much information as possible on bird migration in Central Florida, especially by analyzing migrants

NON-SPONSORED RESEARCH REPORTS: 1973-74

BIOLOGICAL SCIENCES (Continued)

killed at tall lighted structures.

* * * * *

TITLE: Histoplasmosis in Florida

PRINCIPAL

INVESTIGATOR: Roseann White

A B S T R A C T

The project objective is the fractionation and chemical characterization of *H. capsulatum* cell wall antigens to find a better skin test antigen for use in diagnosis of Histoplasmosis. Preparation of proposal to Research Corp. for funding.

* * * * *

TITLE: Floristics and Ecology of Central Florida

PRINCIPAL

INVESTIGATOR: Henry O. Whittier

A B S T R A C T

The project objective is to identify and collect plants representing the various ecosystems found in the Central Florida region, creating checklists and guides for use by students, conservation agencies, and interested members of the public.

* * * * *

NON-SPONSORED RESEARCH 1973-74

CHEMISTRY

TITLE: Spectroscopic Studies of Iron Amino Acid Complexes

PRINCIPAL INVESTIGATOR: C. A. Clausen

A B S T R A C T

The project objective is to synthesize and study model complexes for the purpose of elucidating the nature and role of metal atoms in metalloenzymes.

* * * * *

TITLE: Isolation and Characterization of Succinic Acid
Dehydrogenase

PRINCIPAL INVESTIGATOR: Glenn N. Cunningham

* * * * *

TITLE: Isolation, Characterization of Glutamic
Dehydrogenase in Escherichia coli

PRINCIPAL INVESTIGATOR: Glenn N. Cunningham

A B S T R A C T

Characterization of glutamic dehydrogenase and its relation to enzymes with similar function in Escherichia coli.

* * * * *

CHEMISTRY (continued)

TITLE: Molecular and genetic characterization of tumorous and non-tumorous strains of *Drosophila Melanogaster*

PRINCIPAL INVESTIGATOR: Glenn N. Cunningham

ABSTRACT

To establish the biochemical basis for head tumor product in *Drosophila*.

* * * * *

TITLE: Chemical studies by tandem mass spectrometry

PRINCIPAL INVESTIGATOR: G. R. Hertel

ABSTRACT

Long-range objective: Study of ion-molecule and charge exchange reactions between various ions and molecules in the gas phase.

* * * * *

TITLE: Structural Effects on the Acid Bond in Peptide & Related Systems

PRINCIPAL INVESTIGATOR: John P. Idoux

A B S T R A C T

The project objective is to obtain fundamental structural information on a model peptide bond system.

* * * * *

TITLE: TLC and UV - Vis Spectrometry of Isomeric DNP's

PRINCIPAL INVESTIGATOR: John P. Idoux

CHEMISTRY (continued)

A B S T R A C T

The objective is to develop method for separating isomeric DNP's; to study spectral properties of isolated isomeric DNP's.

* * * * *

TITLE: The Capability and Nature of the Amide Bond as a
Transmitter of Electronic Effects

PRINCIPAL INVESTIGATOR: John P. Idoux

A B S T R A C T

The project objective is to establish the manner and mode of electronic effect transmission by the amide bond. Acetanilide, biphenyl-acetanilide, biphenylbenzanilide and oxanilic acid systems are being investigated.

* * * * *

TITLE: The Application of Linear Free Energy Techniques
to Antibody-Hapten Interactions

PRINCIPAL INVESTIGATOR: John P. Idoux

A B S T R A C T

The project objective is to obtain structure-property correlations of antibody-hapten reactions. The correlations of interest are those which will provide information concerning the active sites of antibody molecules and thus be of fundamental importance in the study of immunological processes.

* * * * *

TITLE: Investigation of New, Solid, Inert Supports for
Immobilizing Enzymes

PRINCIPAL INVESTIGATOR: John P. Idoux

CHEMISTRY (continued)

A B S T R A C T

The project objective is to synthesize new, solid, inert supports which can be used for immobilizing enzymes. The supports of interest are ones which can be used in continuous, large-scale chemical processes and which show the potential for resulting in reduced energy demands and requirements for these processes.

* * * * *

TITLE: Theoretical investigation of LEED

PRINCIPAL INVESTIGATOR: S. K. Knudson

A B S T R A C T

The project objective is to initiate a study of Low-Energy Electron Diffraction from solids. This will entail a literature search of this topic and of electron scattering from gaseous atoms and molecules.

* * * * *

TITLE: Variation-Perturbation Treatment of Chemical Scattering Problems

PRINCIPAL INVESTIGATOR: S. K. Knudson

A B S T R A C T

The objective is a simplified description of inelastic scattering.

* * * * *

TITLE: Reactions of citrus flavonoids with metal ions

PRINCIPAL INVESTIGATOR: B. C. Madsen

A B S T R A C T

The project objective is to investigate reactions of various flavonoid compounds with metal ions with respect to conditions suitable for formation of stable complexes and to investigate various spectroscopic properties of these complexes.

CHEMISTRY (continued)

TITLE: Synthesis of B-nitrostyrene derivatives

PRINCIPAL INVESTIGATOR: G. C. Mattson

A B S T R A C T

The project objective is a synthesis of reaction products of the base catalyzed addition of activated methylene compounds with B-nitrostyrene. Preparation of additional quantities of 2-(2-nitro-1-phenylethyl)-1,3-cyclohexanedine for further testing as potential anti-cancer agent by National Cancer Institute, Drug Development Branch.

* * * * *

TITLE: Phenol alkylation reactions

PRINCIPAL INVESTIGATOR: G. C. Mattson

ABSTRACT

Evaluation of potential heterogeneous catalysts for the reaction of phenolic compounds with simple Ketones.

* * * * *

TITLE: Synthesis of Spiro [4.4] nonatetraene

PRINCIPAL INVESTIGATOR: Thomas N. Wheeler

A B S T R A C T

The project objective is to effect the synthesis of spiro [4.4] nonatetraene by photochemical methods and classical synthetic methods.

* * * * *

NON-SPONSORED RESEARCH 1973-74

CHEMISTRY (continued)

TITLE: Photochemical routes to spirarenes

PRINCIPAL INVESTIGATOR: Thomas N. Wheeler

ABSTRACT

The project objective is to effect the synthesis of spiro [4.6] undecapetaene by photochemical methods.

* * * * *

TITLE: Infantile autism: a biochemical model.

PRINCIPAL INVESTIGATOR: W. W. Youngblood

ABSTRACT

Project objective is to experimentally determine if the behavioral disorder of Autism may be detected by urinary phenolic acid patterns, and to use this information to test the working hypothesis.

NON-SPONSORED RESEARCH PROJECTS

MATHEMATICAL SCIENCES

TITLE: Two-stage selection procedures

PRINCIPAL

INVESTIGATOR: Paul N. Somerville

A B S T R A C T

Suppose there are $k+1$ normal populations each identically distributed except for their (unknown) means. We wish to select the population with the largest mean. At stage 1, n_1 individuals are selected from each population. Only the c populations producing the largest sample means are retained, with a further n_2 individuals being selected from them. The chosen population is the one with the largest cumulative mean. The object is to choose the "optimum" set of parameters n_1, n_2, c under various constraints.

PRESENTATIONS OF PROFESSIONAL PAPERS

ALLIED HEALTH SCIENCES

GETTING, V. A., "Role of Affiliates to the Association of State and Territorial Health Officers" presented to Association of State and Territorial Directors of Local Health Services at annual meeting, May 14, 1974, in Tampa, Florida.

GETTING, V. A., "Health Information Systems as They Relate to the Means for Quality of Life" presented to Regional Meeting, Florida Public Health Association, on June 14, 1974, in Orlando, Florida.

PRESENTATIONS OF PROFESSIONAL PAPERS

BIOLOGICAL SCIENCES

VICKERS, DAVID H., in conjunction with W. McLELLON, J. F. CHARBA and GARY I. BERGSTROM, "Environmental Impact Assessment of a Sanitary Landfill in a High Water Table Area" presented at the 29th Annual Purdue Industrial Waste Conference, Purdue University, West Lafayette, Indiana, on May 9, 1974.

CHARBA, JULIUS F., "Presence and Survival of Bacteria in Contaminated Ground Water" presented before South Florida Branch, American Society for Microbiology, Boca Raton, Florida, on December 8, 1973.

CHARBA, JULIUS F., in conjunction with D. H. VICKERS, W. McLELLON and GARY I. BERGSTROM, "Environmental Impact Assessment of a Sanitary Landfill in a High Water Table Area" presented at the 29th Annual Purdue Industrial Waste Conference, Purdue University, West Lafayette, Indiana, on May 9, 1974.

EHRHART, L. M., "Studies of the Loggerhead Turtles (Caretta caretta) of Merritt Island, Florida" presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

EHRHART, L. M., "Ecological Studies of the Spotted Skunk, Spilogale putorius Gray (Carnivora) on the east coast of Florida" presented at First International Theriological Congress in Moscow, USSR, June 1974.

KOEVENIG, JAMES L., "Grasslands Ecology - A Semi-Inquiry Film," presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

KOEVENIG, JAMES L., "Plant Growth Hormones and Stamen Filament Development" presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

KOEVENIG, JAMES L., "The Origin, Filming and Use of the Semi-Inquiry Film 'Cave Ecology'" presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

PRESENTATIONS OF PROFESSIONAL PAPERS

BIOLOGICAL SCIENCES (continued)

KOEVENIG, JAMES L. - Paintings and exhibitions:

One-man watercolor exhibit at Orlando Chamber of Commerce in December 1973; also at Winter Park Chamber of Commerce in October 1973, and at Winter Park Mall fall art show; won Honorable Mention for watercolors.

Exhibited at Central Florida Fair art show; won second prize for watercolors.

Exhibited at Colonial Plaza Mall art show.

Exhibited at Seminole Plaza art festival; won a merit award and a purchase award for watercolors.

Exhibited in the Florida Watercolor Society fall show at Florida Technological University.

One watercolor was selected for the Florida Watercolor Society-Arrow Shirt Traveling Watercolor Show.

Exhibited at the Oviedo Market Day in May, 1974.

KUHN, DAVID T., Invited series of seminars on the relationships of aldehyde oxidase and xanthine dehydrogenase to head tumors in *Drosophila melanogaster*, before the Genetics Group at Arizona State University, June 21, 1973 and May 16, 1974.

MICKUS, JOHN C., "Research Methods in Determining Toxic Levels of SRM Exhaust" presented to AIBS Advisory Meeting on July 19, 1974.

MILLER, HARVEY A., "Rhyniophytina, Alternation of Generations, and the Evolution of Bryophytes" presented to First International Congress of Systematic and Evolutionary Biology at Boulder, Colorado, in August, 1973.

MILLER, HARVEY A., "Laboratory Methods for Science Teacher Candidates" presented to Florida Academy of Sciences, March 1974, in Orlando, Florida (with J. ARMSTRONG).

PRESENTATIONS OF PROFESSIONAL PAPERS

BIOLOGICAL SCIENCES (continued)

OSBORNE, JOHN A., "Zooplankton Species Diversity in Lake Apopka" presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

SNELSON, F. F., JR., "Systematics of the minnow Notropis lirus (Pisces)" presented at Southeastern Division meeting of American Society of Ichthyologists and Herpetologists, Savannah, Georgia, April 1974.

STOUT, I. JACK, "Summary of Ecological Studies Concerning the Solid Rocket Exhaust Project" presented to review panel of scientists of the American Institute of Biological Sciences, Kennedy Space Center, July 19, 1973.

STOUT, I. JACK, "Review of Studies of Rocket Exhaust and Its Impact on Ecosystems" presented before Atmospheric Effects Panel of NASA/Kennedy Space Center, January 15, 1974.

STOUT, I. JACK, "Ecological Studies on Rocket Exhaust" presented to review panel representing the American Institute of Biological Sciences, Kennedy Space Center, May 30-31, 1974.

STOUT, I. JACK, "Population Dynamics of Voles (Microtus) in Contrasting Ecosystems in Southeastern Washington, 1968-70" presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

SWEENEY, M. J. and R. S. WHITE, "Antigenic Components of Yeast Phase Histoplasma Capsulatum Cell Walls" presented to South Florida Branch of the American Society for Microbiology in Boca Raton, Florida, November 1973.

SWEENEY, M. J., D. F. QUALLS and P. J. NEUHAUS, "Method for the Production of Specific FITC Labelled Globulins to Dirofilaria immitis Microfilaria" presented to South Florida Branch of the American Society for Microbiology, Boca Raton, Florida, November 1973.

PRESENTATIONS OF PROFESSIONAL PAPERS

BIOLOGICAL SCIENCES (continued)

SWEET, HAVEN C., "The Ecology of Merritt Island" presented before American Institute of Biological Sciences Advisory Committee at Kennedy Space Center, July 19, 1973.

VANDERMOLEN, GAIL E., "Electron Microscope Observations of Citrus Roots Affected with Young Tree Decline" presented at Annual Meeting of Southeast Electron Microscopy Society at University of North Carolina, Chapel Hill, North Carolina, May 17-18, 1974.

WHITE, ROSEANN S. and M. J. SWEENEY, "Antigenic Components of Yeast Phase Histoplasma Capsulatum on Cell Walls" presented to South Florida Branch of the American Society for Microbiology at Boca Raton, Florida, November 1973.

PRESENTATIONS OF PROFESSIONAL PAPERS

CHEMISTRY

CLAUSEN, CHRIS A. III, "The Mossbauer Spectra of ^{237}Np in Ion-Exchange Resins and Solvent Extractants" presented to the Florida Academy of Sciences annual meeting at Florida Technological University, Orlando, Florida, in March 1974.

CLAUSEN, CHRIS A. III, "The Use of the Case Study Method in Teaching Industrial Chemistry" presented to the 167th National Meeting of the American Chemical Society in Los Angeles, California, April 1974.

CLAUSEN, CHRIS A. III, "Teaching Industrial Chemistry by the Case Study Method" presented to the Florida Meeting-in-Miniature of the American Chemical Society, in Tallahassee, May 10, 1974.

CLAUSEN, CHRIS A. III, "Chemical Applications of Mossbauer Spectroscopy" presented as a seminar at the University of Alabama in April 1974.

CLAUSEN, CHRIS A. III, "Chemical Applications of Mossbauer Spectroscopy" presented as a seminar at Florence State University, Florence Alabama, in April 1974.

CLAUSEN, CHRIS A. III, "The Case Study Method in Teaching Industrial Chemistry" presented as a seminar at the University of South Alabama, Mobile, Alabama, in April 1974.

CLAUSEN, CHRIS A. III, "Mossbauer Spectroscopy - A Research Tool" presented as a seminar at the University of Tennessee, Knoxville, in April 1974.

CLAUSEN, CHRIS A. III, "Chemical Applications of Mossbauer Spectroscopy" presented as a seminar to the Lakeland, Florida Subsection of the American Chemical Society in December 1973.

CLAUSEN, CHRIS A. III, "Industrial Chemistry Teaching Materials" presented as a seminar to the Mobile, Alabama Section of the American Chemical Society in April 1974.

CLAUSEN, CHRIS A. III, "Industrial Chemistry," presented as a seminar to the Alabama Section of the American Chemical Society in Tuscaloosa, April 1974.

PRESENTATIONS OF PROFESSIONAL PAPERS

CHEMISTRY (continued)

CUNNINGHAM, GLENN N., "Unusual Similarities in the Regulation of Aspartic Semi-Aldehyde Dehydrogenase and Glutamic Acid Dehydrogenase in Escherichia coli" presented to annual meeting of Florida Academy of Sciences at Florida Technological University, Orlando, in March 1974.

CUNNINGHAM, GLENN N., "The Control of Chemical Reactions in Living Organisms" presented to Florida Technological University chapter of Sigma Xi, February 13, 1974.

IDOUX, JOHN P., "The Capability and Nature of the Amid Bond as a Transmitter of Electronic Effects" presented to Florida Section Meeting-in-Miniature of the American Chemical Society in Tallahassee, Florida, on May 10, 1974.

KNUDSON, STEPHEN B., "Review of a Molecular Orbital Method for Large Molecules" presented as departmental seminar, Florida Technological University, November 10, 1973.

McGEE, WM. W.: Talks on the role of the Forensic Scientist in law enforcement presented at the following meetings: Lions Club Breakfast Meeting in May 1973; Winter Park High School Science Club in April 1973; Science Seminar at Florida Technological University in August and October 1973; Central Florida Medical Technologists in January 1973.

McGEE, WM. W.: Presentations on the need for educational programs (at the university level) in Forensic Science at the following meetings: American Academy of Forensic Sciences, National Meeting, March 1973, in Las Vegas, Nevada; Southern Association of Forensic Scientists, Spring Meeting, April 1973 in New Orleans, Louisiana; and Fall Meeting, September 1973, in Miami Beach, Florida.

McGEE, WM. W.: Presentations on problems associated with developing a Forensic Science Degree program at a college or university at the following meetings: American Chemical Society, 168th National Meeting, in Atlantic City, New Jersey, September 1974; Southern

PRESENTATIONS OF PROFESSIONAL PAPERS

CHEMISTRY (continued)

Association of Forensic Scientists, Spring Meeting, April 1974, in Lexington, Kentucky.

McGEE, WM. W., presented paper on proposed degree program in Forensic Science at American Academy of Forensic Science meeting in Dallas, Texas in February 1974; also at Southern Association of Forensic Scientists meeting in Miami, Florida, in September 1973.

WHEELER, THOMAS N., "Synthesis and Properties of Spirarenes" presented as a seminar at Florida-Atlantic University, Boca Raton, Florida, on May 1, 1974.

WHEELER, THOMAS N., "The Organic Chemist as Molecular Architect", a taped interview presented on the radio series "FTU: On Campus", aired over radio station WLOF on November 11, 1973.

WHEELER, THOMAS N., "The Synthesis of Spiro [4.6] undecane-1,6-dione" presented as a seminar at the Florida Section, American Chemical Society Meeting-in-Miniature in Tallahassee, on May 9, 1974 (given by an undergraduate research student, Mr. Kirk Young).

YOUNGBLOOD, WM. W., "Analysis of Polycyclic Aromatic Hydrocarbons at the Nanogram Level" presented to the Marine Biomedical Research Institute, Galveston, Texas, on October 18, 1973.

YOUNGBLOOD, WM. W., "Hydrocarbons in the Marine Environment" and "Drugs from the Sea" presented to the Symposium on Man and the Sea, Marine Biomedical Research Institute, Galveston, Texas, on January 19, 1974.

YOUNGBLOOD, WM. W., "Utilization of Mass Spectrometry for Quantitative Analysis" presented to Institute for Child Development, School of Medicine, University of North Carolina, on March 16, 1974.

PRESENTATIONS OF PROFESSIONAL PAPERS

MATHEMATICAL SCIENCES

LYTLE, ERNEST J., "Computation Simplification of Certain Non-parametric Statistics", oral and written reports on consulting work under NTEC Grant #0335-02-70.

FALCONER, DAVID R., invited speaker on "Future Trends" at Data Processing Management Association, Southeast Regional Meeting, Orlando, Florida, October 1973.

FALCONER, DAVID R., invited speaker on "Future Trends" for Management Seminar of Data Processing Management Association at Nashville, Tennessee, March 1974.

GERBER, HOMER C., "Think Metric", presented to The Actioneers at their meeting in Orlando, Florida, on April 15, 1974.

OSTLE, BERNARD, "Basic Statistical Concepts", presented at a Medical Care Evaluation Workshop sponsored by the Florida Hospital Association Research and Education Foundation, Orlando, Florida, on June 28, 1974.

RHEIN, WALTER J., "Digital Computer Laboratory for Computer Science", presented at annual meeting of the Florida Academy of Sciences, Florida Technological University, Orlando, March 22, 1974.

SOMERVILLE, PAUL N., "Optimum Sample Size for Choosing the Population Having the Smallest Variance (Large Sample Size Results)", presented at annual meeting of American Statistical Association in New York, New York, December 27-30, 1973.

PRESENTATIONS OF PROFESSIONAL PAPERS

PHYSICS

BRENNAN, J. J., "Physics for Elementary Education Majors" presented to annual meeting of the American Association of Physics Teachers in Chicago, Illinois, in February 1974.

OELFKE, WILLIAM C., "Manual Fourier Analysis of Interferograms" presented before the Southeastern Section meeting of the American Physical Society in Winston-Salem, North Carolina, in November 1973.

OELFKE, WILLIAM C., "Manual Fourier Analysis", presented to Optical Society Meeting at Florida Technological University on November 23, 1974.

DOCTORAL DISSERTATIONS COMPLETED DURING 1969-74

1. Armstrong, Lee H. "Development and evaluation of the use of pedagogical subject matter involving dienes blocks within an individualized routine in a cupm level I mathematics course for elementary education majors," Florida State University, 1973.
2. Ehrhart, Llewellyn M. "Behavioral studies of three sub-species of the old-field mouse, Peromyscus polionotus," Cornell University, 1971.
3. Gennaro, Robert N. "Studies on the purification of the 'toxotoxin' produced by Toxoplasma gondii," Texas A and M University, 1972.
4. Laird, Robert J. "Ultrastructural Observations on the Mucosal Epithelium of the Aldosterone-Stimulated Toad Urinary Bladder," University of Texas Medical Branch at Galveston, June, 1972.
5. Taylor, Michael D. "An upper bound on the number of wild points on a 2-sphere," Florida State University, 1969.
6. Vickers, David H. "Metabolism of ¹⁴C labeled TEPA in the tobacco budworm, Heliothis virescens (f.)," Louisiana State University, 1971.
7. White, Roseann S. "Purification and Properties of Pyridoxine Kinase from E. coli B.," University of Texas, June, 1970.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

ALLIED HEALTH SCIENCES

BUTLER, MARIAN J., "Medical Legal Aspect of Consents and Authorizations", Florida Medical Record Association Bulletin, Winter 1974.

BUTLER, MARIAN J., "Upward Mobility for the Medical Record Employee", Medical Record News, Journal of the American Medical Record Association, Vol. 45, pp. 21-25. 1974 (June).

BUTLER, MARIAN J., "Understanding and Implementing Change", Florida Medical Record Association Bulletin, July 1974, pp. 5-7.

JOHNS, PATRICIA A., "Characterization of Pseudomonas Species for Identification in the Clinical Laboratory", American Journal of Medical Technology, 39:495-500. 1973.

LAIRD, ROBERT J., "Ultrastructural Observations on the Aldeosterone-Stimulated Toad Urinary Bladder Epithelium: ATPase Activity", Journal of Ultrastructure Research 44:339. November 1973.

PERRIN, SHIRLEY, "A Profile of Entering Medical Record Administration Students", Medical Record News, Volume 44, #3, pp. 55-71. June 1973.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

BIOLOGICAL SCIENCES

VICKERS, DAVID H., First Annual Report to the National Aeronautics and Space Administration, Kennedy Space Center, on Ecological Effects and Environmental Fate of Solid Rocket Exhaust (Grant No. NGR 10-019-009), Chapter 6.

VICKERS, DAVID H., JULIUS F. CHARBA, W. M. McLELLON and G. I. BERGSTROM, "Environmental Impact Assessment of a Sanitary Landfill in a High Water Table Area", 29th Annual Purdue Industrial Waste Conference, Purdue University, West Lafayette, Indiana, May 7-9, 1974.

CHARBA, JULIUS F., D. H. VICKERS, W. M. McLELLON AND G. I. BERGSTROM, "Environmental Impact Assessment of a Sanitary Landfill in a High Water Table Area", 29th Annual Purdue Industrial Waste Conference, Purdue University, West Lafayette, Indiana. May 7-9, 1974.

EHRHART, L. M., "Studies of the Loggerhead Turtles (Caretta caretta) of Merritt Island, Florida", Quart. J. Fla. Acad. Sci. 37(1):6. 1974.

EHRHART, L. M., "Ecological Studies of the Spotted Skunk, Spilogale putorius Gray (Carnivora) on the East Coast of Florida", First International Theriological Congress, Moscow, U.S.S.R., June 1974. (Abstract)

EHRHART, L. M., H. C. SWEET and F. F. SNELSON, First Annual Review of NASA Research (Grant No. NGR 10-019-004) by RTOP 908-64-47 Management Panel and Ad Hoc Review Committee of the American Institute of Biological Sciences, July 19, 1973.

KOEVENIG, JAMES L., "Non-polar movement of N_6 -benzyladenine-¹⁴C in coleoptile, stem, petiole and stamen filament sections", Canadian Journal Bot. 51:2079-83. 1973.

KOEVENIG, JAMES L., "The effect of photoperiod, temperature and plant growth hormones on initiation of archegoniophore elongation in the thalloid liverwort Reboulia hemisphaerica", The Bryologist 76: 501-504. 1973.

KOEVENIG, JAMES L., a review of "Sex and Birth Control: A Guide for the Young," by E. J. Lieberman and E. Peck, in American Biology Teacher 36:123-124. 1974.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

BIOLOGICAL SCIENCES (continued)

KOEVENIG, JAMES L., a review of "The Sculpture of Life," by E. Borek, in Amer. Biol. Teach. 36. 1974.

KOEVENIG, JAMES L. and D. SILLIX, "Movement of IAA in Sections from Spider Flower (Cleome hassleriana) Stamen Filaments", Amer. J. Bot. 60:231-235. 1973.

KOEVENIG, JAMES L., a review of "Tests for 'Interaction of Man and Biosphere'" by D. Chaney and H. Grobman. Amer. Biol. Teach. 35: 297. 1973.

KUHN, D. T., "New Mutants (f^{tuh} ; Bx^{tuh}) in Drosophila Melanogaster", Drosophila Information Service 50:24. 1973.

KUHN, D. T., "Effect of Maternal Age upon Aberrant Sex Ratio Condition in a Tumorous-head Strain of Drosophila melanogaster", Drosophila Information Service 50:117-118. 1973.

KUHN, D. T., "A Maternally Effected Sex Ratio Condition in the Tumorous-Head Strains of Drosophila melanogaster", Genetics 74: s146. 1973.

KUHN, D. T., "Genetics, principles, and applications", in Handbook of Mental Retardation Syndromes, by C. H. Carter. Charles C. Thomas, Publisher, Springfield, Illinois. 1974.

KUHN, D. T. and S. F. DORGAN, "Homeotic effect of tumorous-head in homokaryotypes and heterokaryotypes, and the differential effect of the enhancer gene in the tumorous-head strain of Drosophila melanogaster", Genetics 77: s37.

MILLER, HARVEY A., "Rhyniophytina, alternation of generations, and the evolution of bryophytes", J. Hattori Bot. Lab., July 1, 1973.

MILLER, HARVEY A. and J. H. ARMSTRONG, "Laboratory Methods for science teacher candidates", Florida Sci. 37 (supp. 1): 26. 1974.

MILLER, HARVEY A., "Hepaticae through the ages", Revista Fac. Cienc., Lisboa 17:763-775. 1974.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

BIOLOGICAL SCIENCES (continued)

OSBORNE, JOHN A., "Control of Hydrilla verticillata Royle using a light reduction agent", Florida Dept. of Natural Resources, Bureau of Aquatic Plant Research and Control, Tallahassee, Florida, 96 p. 1974.

OSBORNE, JOHN A., "The limnology of Spring Lake, Florida", Dr. Phillips Foundation, Orlando, Florida, 52 p. 1974.

PRICE, HAROLD J., "Unilateral endosperm breakdown following Secale Cereale L.X. Secale Africanum Stapf. reciprocal crosses", Incompatibility Newsletter 3:25-26. 1973.

PRICE, HAROLD J. and K. BACHMAN, "Nuclear DNA content and evolution in Microseris", Genetics 74: (Supp. No. 2, Part 2) s219. 1973.

PRICE, HAROLD J., A. H. SPARROW and A. F. NAUMAN, "Evolutionary and developmental considerations of the variability of nuclear parameters in higher plants, 1 Genome volume, interphase chromosome volume, and estimated DNA content of 236 gymnosperms", Brookhaven Symp. Biol. 25:390-421. 1974.

PRICE, HAROLD J. and H. C. STUTZ, "Unilateral seed failure in reciprocal crosses of Secale cereale X Secale africanum", Genetics 77 (Suppl. No. 1, Part 2): s53. 1974.

REYNOLDS, D. R., T. T. ELLIS and C. J. ALEXOPOULOS, "Hulle cell development in Emericella nidulans". Mycologia 65:1028-1035. 1973.

REYNOLDS, D. R. and B. R. POHLAD, "Treubimyces rediscovered", Mycologia 66:521-524. 1974.

REYNOLDS, D. R. and B. R. POHLAD, "Cyclic patterns of Central Florida sooty mold fungi", Bull. Iowa Acad. Sci. 81:12-13. 1974.

SNELSON, FRANKLIN F., "Notropis Perpallidus, a cyprinid fish from south-central U. S.: description, distribution and life history aspects", Southwestern Naturalist 18(3):291-304. October 1974.

SNELSON, FRANKLIN F., L. M. EHRHART and HAVEN C. SWEET, First Annual Review of NASA Research (Grant No. NGR 10-019-004) by RTOP 908-64-47 Management Panel and Ad Hoc Review Committee of the American Institute of Biological Sciences, July 19, 1973.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

BIOLOGICAL SCIENCES (continued)

SNELSON, FRANKLIN F., "Systematics of the minnow Notropis lirus (Pisces)", Bulletin of the Association of Southeastern Biologists 21: (2) 85. April 1974.

SNELSON, FRANKLIN F., "Systematics and distribution of the ribbon shiner Notropis fumeus (Cyprinidae) from central United States", American Midland Naturalist 89 (1):166-191. 1973.

STOUT, I. JACK and D. E. SONENSHINE, "A convenient bait for small mammal live trapping studies", Acta Theriologica 18 (1):123. 1973.

STOUT, I. JACK and D. E. SONENSHINE, "A striped skunk population in Virginia, 1963-69", Chesapeake Sci. 15 (3):140-145. 1974.

STOUT, I. JACK, "Egg Hatchability Studies", pp. 25-43 in First Annual Report to NASA/KSC: "Ecological effects and environmental fate of solid rocket exhaust". 1974.

STOUT, I. JACK, "Field studies - Plants", pp. 44-55 in First Annual Report to NASA/KSC: Ecological effects and environmental fate of solid rocket exhaust". 1974.

STOUT, I. JACK, "Laboratory studies - Plants", pp. 56-64 in First Annual Report to NASA/KSC: "Ecological effects and environmental fate of solid rocket exhaust". 1974.

STOUT, I. JACK, "Population dynamics of voles (Microtus) in contrasting ecosystems in southeastern Washington, 1968-70", Fla. Scientist 37 (Supp. 1):6. 1974.

SWEENEY, MICHAEL J., R. S. WHITE, J. V. CALCAGNO and H. C. OELS, "Chemical fractionation of antigenic components liberated from purified yeast phase Histoplasma capsulatum cell walls", Bact. Proc. 22. 1973.

SWEENEY, MICHAEL J., J. V. CALCAGNO and H. C. OELS, "Precipitin reactive material from yeast phase Histoplasma capsulatum cell walls", Bact. Proc. 192. 1973.

SWEENEY, MICHAEL J. and R. S. WHITE, "Antigenic components of yeast phase Histoplasma capsulatum cell walls", South Fla. ASM Newsletter. 1974.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

BIOLOGICAL SCIENCES (continued)

SWEENEY, MICHAEL J., D. F. QUALLS and P. J. NEWHAUS, "Method for the production of specific FITC labelled globulins to Diroflaria immitis microfilaria", Fla. Scientist, Vol. 37, Supp. 1, p. 31. 1974.

SWEET, HAVEN C., "Hot Dogs and Health", The Sciences 13:(6) 31. 1973.

SWEET, HAVEN C., "A New Dye for the Rapid Staining of Onion Chromosomes", American Biology Teacher 36 (3):146-148. 1974.

SWEET, HAVEN C., L. M. EHRHART, and F. F. SNELSON, First Annual Review of NASA Research (Grant No. NGR 10-019-004) by RTOP 908-64-47 Management Panel and Ad Hoc Review Committee of the American Institute of Biological Sciences, July 19, 1973.

TAYLOR, WALTER K., "Ageing of Ovenbirds by rusty-tipped terials and skull ossification", EBBA News 36:71-72, 97. 1973.

TAYLOR, WALTER K., "Nocturnal migrants killed at a Central Florida TV tower, autumns 1969-71", Wilson Bulletin 85:42-51. 1973.

TAYLOR, WALTER K., "Bill deformities in two Florida birds", Florida Field Naturalist 1:6-8. 1973.

TAYLOR, WALTER K., "Black-throated Blue and Cape May Warblers Killed in Central Florida", Bird-Banding 44:258-266. 1973.

TAYLOR, WALTER K., "Florida's Winter Waterfowl", Florida Injured Wildlife Sanctuary, Inc., March Newsletter, pp. 6-7. 1974.

TAYLOR, WALTER K., "A New Hybrid Bunting (Passerina cyanea x Passerina ciris)", Auk 91:485-487 (with colored frontispiece). 1974.

VANDERMOLLEN GAIL E., "Preliminary electron microscope observations of citrus with young tree decline", Florida Scientist 36:92-96. 1974.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

BIOLOGICAL SCIENCES (continued)

WHITE, R. S., M. J. SWEENEY, J. V. CALCAGNO and H. E. OELS,
"Chemical fractionation of antigenic components liberated from
purified yeast phase Histoplasma capsulatum cell walls".
Bact. Proc. 22, p. 131, American Society for Microbiology. 1974.

WHITE, R. S. and M. J. SWEENEY, "Antigenic components of yeast
phase Histoplasma capsulatum cell walls". South Fla. ASM

WHITTIER, HENRY O., "Mosses of the Marquesas Islands, French Polynesia",
Bryologist 76:174-177. 1973.

WHITTIER, HENRY O., "List of Mosses of Southeastern Polynesia",
Bryologist 77:427-446. 1974.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

CHEMISTRY

CLAUSEN, C. A. III, R. A. PRADOS and M. L. GOOD, "Mossbauer Study of Ruthenium (II) Pentaamines", J. Coordination Chem. 2:201. 1973.

CUNNINGHAM, GLENN N. and DAVID FOSTER, "Unusual Similarities in the Regulation of Aspartic Semi-aldehyde Dehydrogenase and Glutamic Dehydrogenase in Escherichia coli. Florida Academy of Science Bulletin, 1974, and American Society of Microbiology News, July 1974.

IDOUX, JOHN P., "Study of Alkaline Hydrolysis and Nuclear Magnetic Resonance Spectra of Some Thiol Esters", J. Organic Chemistry 38: 4239. 1973.

IDOUX, JOHN P., "A Clean, Quick, Salvageable Method for Treating Mercury Spills", J. Chemical Education 50:739. 1973.

KNUDSON, STEPHEN B. and B. KIRTMAN, "Variation-Perturbation Treatment of Scattering Problems. II. Inelastic and Rearrangement Processes". Phys. Rev. A 8, 296. 1973.

McGEE, WM. W., "Educators in Forensic Science: The Men in the Middle", Proc. of Symposium on Forensic Science, 168th National ACS Meeting, September 1974.

MADSEN, BROOKS C., "Thin-layer Chromatogram Visualization", J. of Chem. Ed. 50:852-3. December 1973.

MADSEN, BROOKS C., "Chemical Monitoring and Analysis", Chapter 8 in Ecological Effects and Environmental Fate of Solid Rocket Exhaust, First Annual Report, submitted to NASA/KSC (Grant No. NGR 10-019-009), January 15, 1974.

WHEELER, THOMAS N., C. A. JACKSON and K. H. YOUNG, "Synthesis of Spire [4.6] undecane-1,6-dione", Journal of Organic Chemistry 39: 1318. 1974.

P U B L I C A T I O N S : 1 9 7 3 - 1 9 7 4

MATHEMATICAL SCIENCES

ANDREWS, LARRY C., "The probability density function for the output of a cross correlator with bandpass inputs", IEEE Trans. on Infor. Theory, Vol. IT-19, No. 1, pp. 13-19. January 1973.

ANDREWS LARRY C., "Output probability density functions for cross correlators utilizing sampling techniques", IEEE Trans. on Aerospace and Elec. Systems, Vol. AES-10, No. 1, pp. 78-81. January 1974.

ANTHONY, J., H. SHERWOOD and M. TAYLOR, "Sequential Convergence and Probabilistic Metric Spaces", Revue Roumaine de Mathematiques Pures et Appliques, T. XIX, No. 10. 1974.

DUTTON, RONALD D., G. HINMAN and C. B. MILLHAM, "The Optimal Location of Nuclear Power Facilities in the Pacific Northwest", Operations Research, Vol. 22, No. 3, May-June 1974.

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